



DoD Electronic Commerce (EC) Architecture



Architecture Agenda

- **Goals and Development of Architecture**
- **Architecture Views and Elements**
 - **Operational View**
 - **Systems View**
 - **Technical View**
- **Systems & Technology Forecast**
- **Architecture Coordination Process**
- **Milestones**



EC Architecture Goals

- **Provide a means for optimizing DoD business operations**
 - **Define DoD business operations and their operational environment**
 - **Define the flow of data/assets necessary to conduct business operations**
 - **Define major system components**
 - **Define flexible industry-based technology profile**
- **Provide the following (through DoD-wide adherence to Architecture):**
 - **Compatibility of business operations**
 - **Commonality of business functions**
 - **Interoperability and scalability of business systems**
 - **Efficient use of resources**



Architecture Development Process

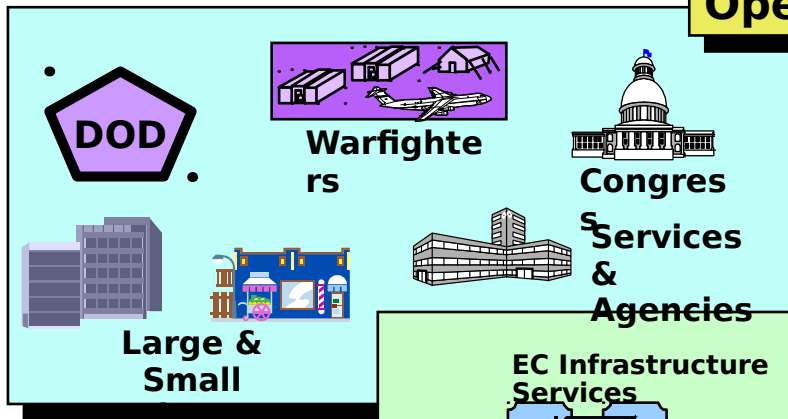
- **JECPO develops initial strawman architecture consistent with C4ISR Architecture Framework**
- **Architecture to be refined through discussions and review with the following**
 - **DoD EC Advisory Council**
 - **OSD EC Strategy Team**
 - **DoD CIO Staff**
 - **Services, Agencies, and PSAs**
 - **Industry**

Today's
Presentatio
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is
Strawman
Architectur
e



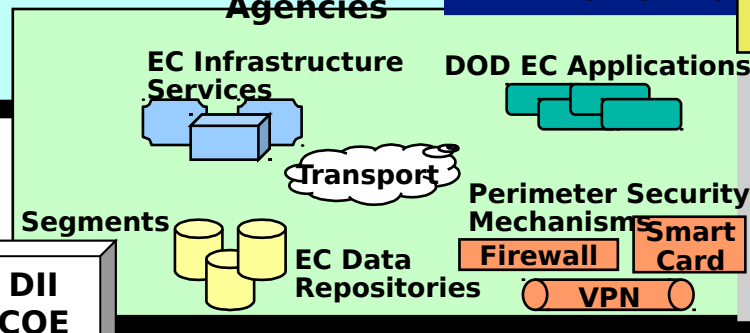
EC Architecture Views

Operational View



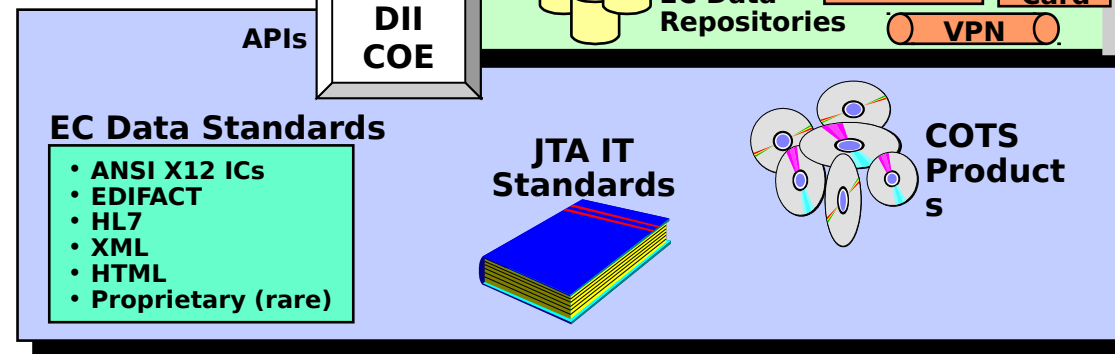
- Functional (operational) requirements
 - Business relationships
 - Information needs (content, form, protection)
 - User functions
 - Performance bounds

Systems View



- System functional descriptions
- System interfaces and connections
- Operations-to system transition

Technical View



- Technical Architecture Profile
- Standards and Technology Forecast



EC Architecture Elements

●	High-level Operational Graphic (OV-1) [required]	Operational View
●	Operational Connectivity Description (OV-2) [required]	
●	Operational Information Exchange Matrix (OV-3) [required]	
◐	System Interface Description (SV-1) [required]	Systems View
◐	Systems Communications Description (SV-2)	
◐	System-to-System Connectivity (SV-3)	
◐	System Functionality Description (SV-4)	
◐	Operations-to-System Traceability Matrix (SV-5)	
◐	System Information Exchange Matrix (SV-6)	
◐	Systems Technology Forecast (SV-9)	
◐	Technical Architecture Profile (TV-1) [required]	
◐	Standards and Technology Forecast (TV-2)	
●		Technical View
●		

● Initial Draft Complete ◐ Work in Progress



Operational View

High-level Operational Graphic (OV-1) [required]

Operational Connectivity Description (OV-2) [required]

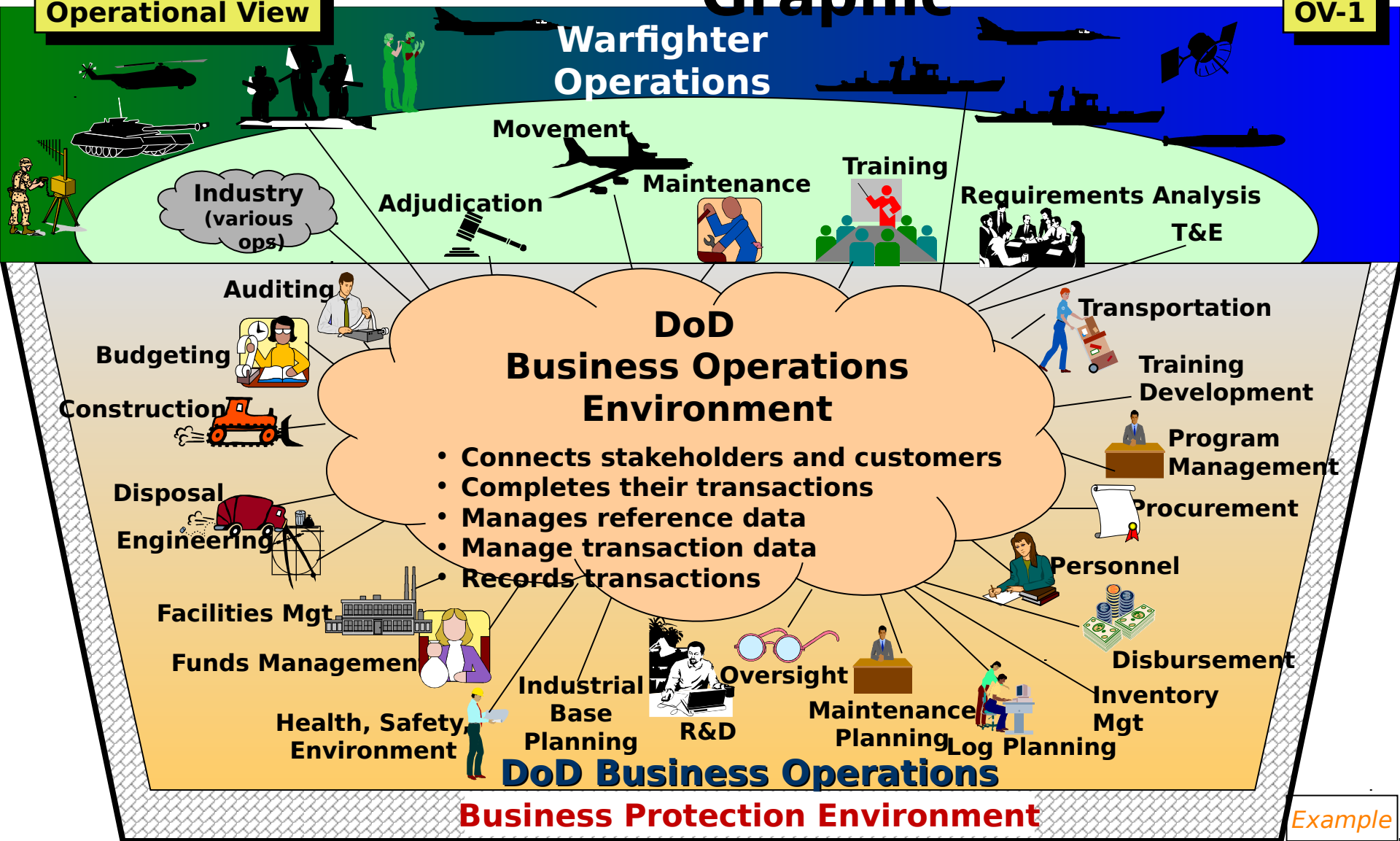
Operational Information Exchange Matrix (OV-3) [required]



DoD EC Architecture High-Level Operational Graphic

Operational View

OV-1





Operational Node Interconnectivity

Operational View

OV-2

- Initial Operational Foci Identified**
- Hardware Acquisition
 - Services Acquisition
 - Construction
 - Personnel Administration
 - Transportation

Hardware Acquisition Focus	Receiving DoD Business Operation																	Receiving DoD Operation										
	Auditing	Budgeting	Construction	Disposal	Engineering	Facilities Management	Funds Management	Health, Safety, Environment	Industrial Base Planning	Inventory Management	Logistics Planning	Maintenance Planning	Oversight	Payment/Disbursement	Personnel Administration	Procurement	Program Management	Research and Development	Training Development	Transportation	Adjudication	Maintenance	Movement	Requirements Analysis	Test and Evaluation	Training	Industry	Warfighter
Originating DoD Business Operation	Auditing												X	X		X					X						X	
	Budgeting		X										X	X		X	X					X		X				
	Construction			X																								
	Disposal				X																							
	Engineering					X				X	X	X					X	X										
	Facilities Management						X																					
	Funds Management							X							X		X	X										
	Health, Safety, Environment				X						X	X							X									
	Industrial Base Planning								X																			
	Inventory Management				X	X					X						X											X
	Logistics Planning				X					X		X					X		X									
	Maintenance Planning										X												X					
	Oversight	X					X									X	X							X			X	
	Payment/Disbursement						X								X													X
	Personnel Administration															X												X
	Procurement	X					X			X			X	X		X	X				X							X
	Program Management		X			X	X				X		X	X		X	X		X					X	X			X
Research and Development				X												X	X							X	X		X	
Training Development										X																X		
Transportation																				X								
Originating DoD Operation	Adjudication							X							X						X							
	Maintenance											X										X						
	Movement																						X					
	Requirements Analysis												X				X							X				X
	Test and Evaluation																X							X				
Training										X									X						X			
Industry	X											X	X		X	X				X			X					
Warfighter		X							X	X											X		X					



Operational Information Exchange Matrix

Operational View

OV-3

Detailed information flows from Node Interconnectivity Matrix (sample)

From	To	Information Flow	Information Nature	Info Details & Performance Metrics	Information Security Needs
Auditing	Adjudication	Audit Reports	Unformatted Text		(e.g. signature)
Auditing	Adjudication	Working Papers	Unformatted Text		
Auditing	Industry	Request for Cost & Pricing Data	Formatted Text		
Auditing	Industry	Request for Records of Cost Incurred	Formatted Text		
Auditing	Oversight	Audit Reports	Unformatted Text		
Auditing	Payment	Audit Reports	Unformatted Text		
Auditing	Procurement	Audit Reports	Unformatted Text		
Auditing	Procurement	Audit Reports	Unformatted Text		



Information flow details to be verified and expanded by information owners





Systems View

System Interface Description (SV-1) [required]

Systems Communications Description (SV-2)

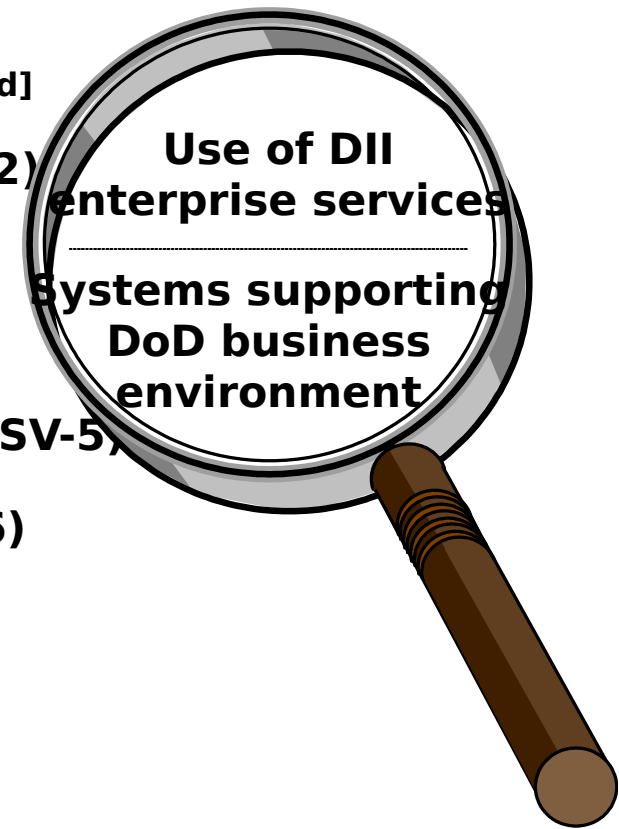
System-to-System Connectivity (SV-3)

System Functionality Description (SV-4)

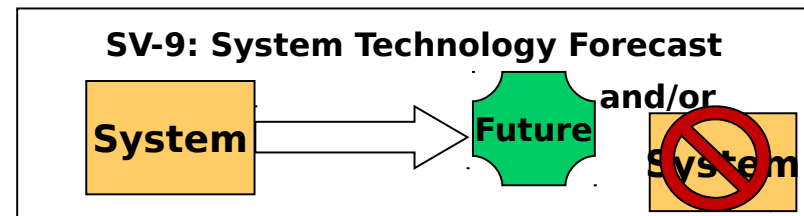
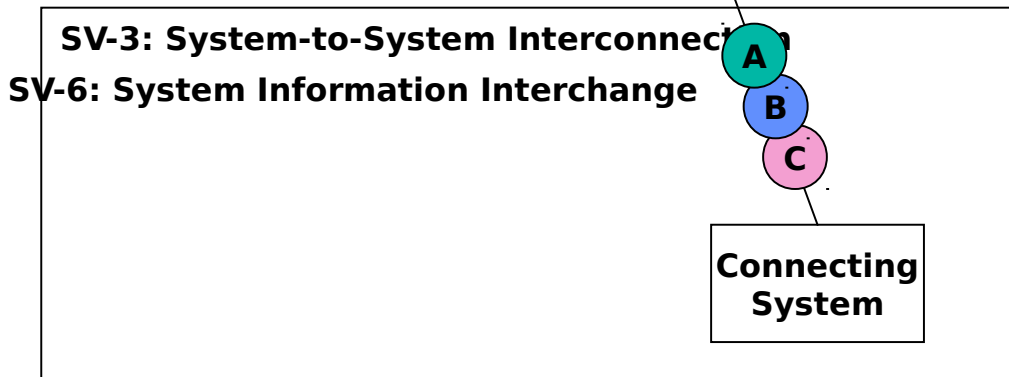
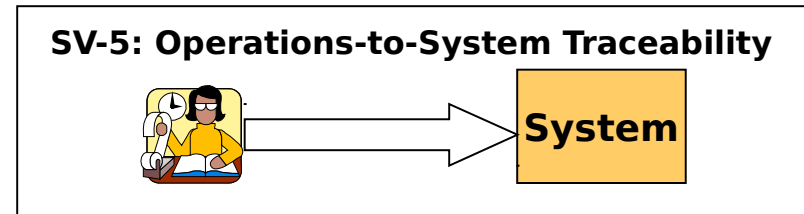
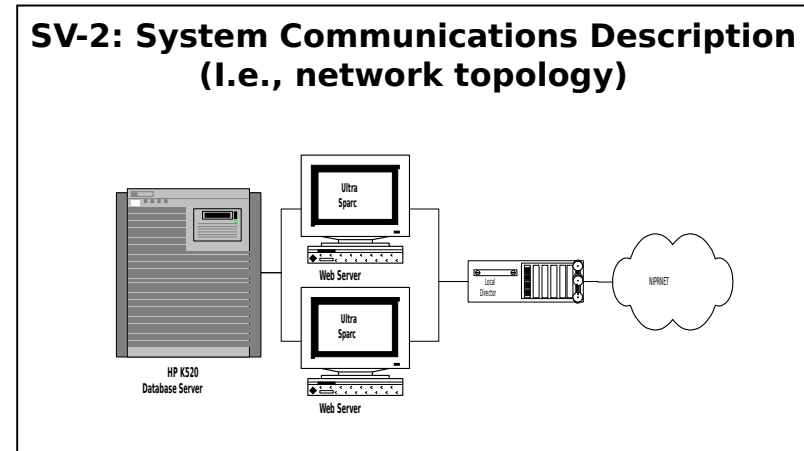
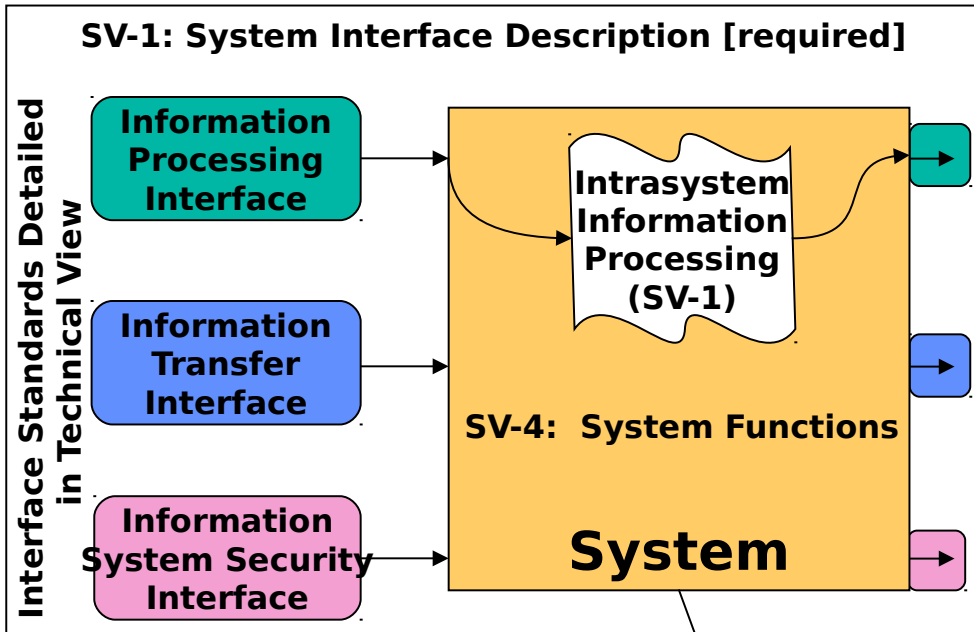
Operations-to-System Traceability Matrix (SV-5)

System Information Exchange Matrix (SV-6)

Systems Technology Forecast (SV-9)



Describing Systems in C4ISR Architecture Framework Terms



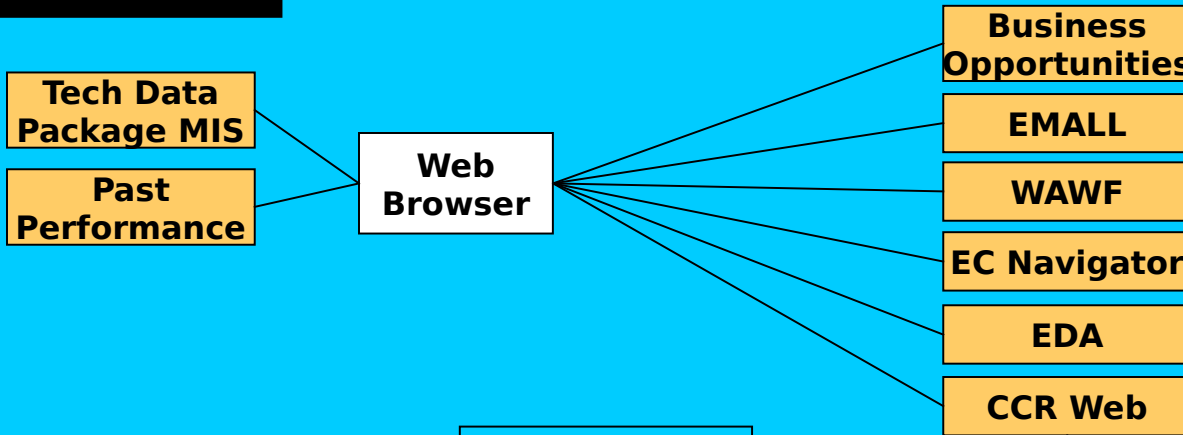


Current System Environment

(a system of systems)

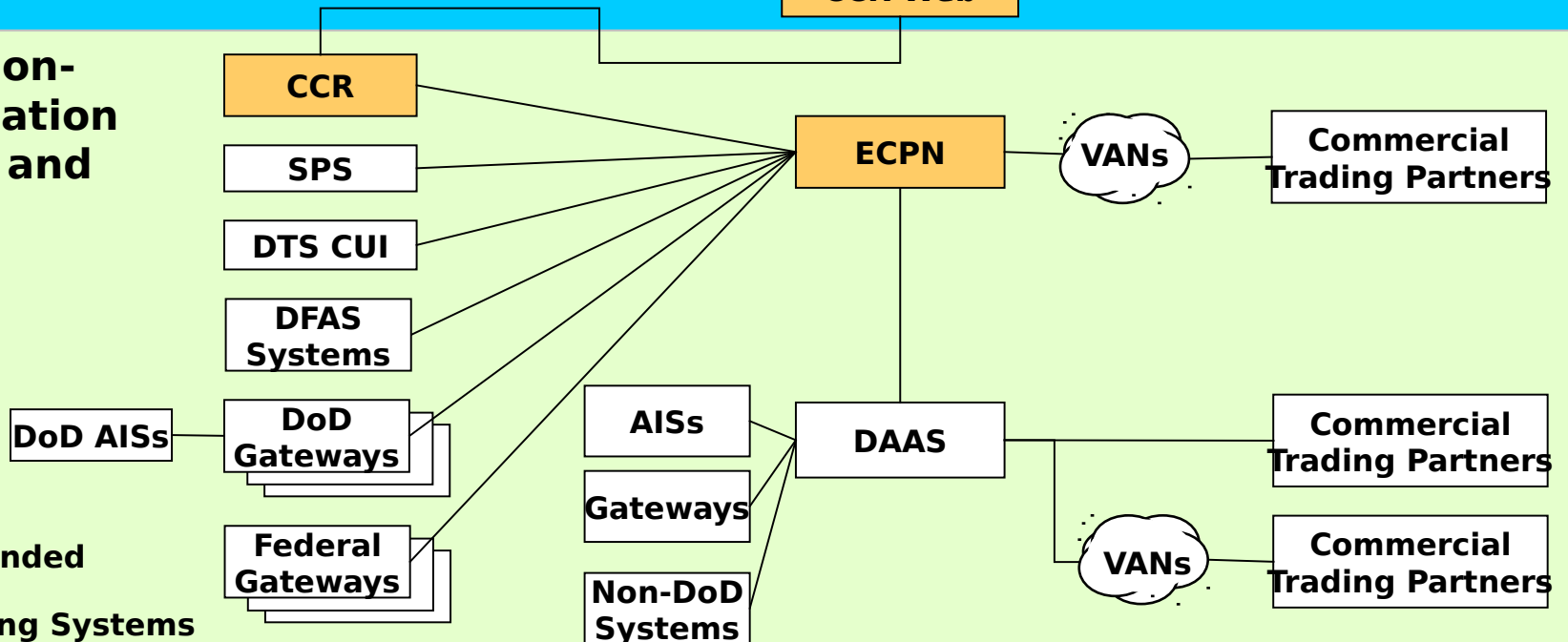
Systems View

SV-3



Web-based Systems and Services

Application-to-application Systems and Services



JECPO Funded
 Connecting Systems



Technical View

Technical Architecture Profile (TV-1) [required]

Standards and Technology Forecast (TV-2)





Technical Architecture Profile Summary

Technical View

TV-1

Information Processing Standards

Data Management

RDBMS SQL

Data Interchange

EDI FIPS 161-2
 - ANSI X12
 - EDIFACT
 - HL7

Document HTML
 SGML
 COTS

Graphics CGM
 JPEG
 GIF

Information Transfer Standards

Applications Support

E-mail SMTP/MIME
 MIME/EDI

File Transfer FTP

Directory/ X.500
 Dir Access LDAP(v3)

Naming DNS

World Wide Web

HTTP HTTP 1.1

URL URL/URI/mailto

Transport TCP

Networking IP

Net/System SNMP

Management various MIBs

Information System Security Standards

Information Processing Security

Protocols X12.58

Passwords FIPS 112

Information Transfer Security

Protocols SSL
 S/MIME
 IPsec
 EDIINT

Sign/Hash DSS
 MD5
 SHS

Encryption DES/3DES
 RC2, RC4, RC5

Certificates X.509v3
 PKCS 1,7,9,10,11



Systems & Technology Forecast



Business Protection Environment

Flexible tool set accommodates wide range of business protection needs. Requires electronic information assurance policies be established.

Business Protection Services

Open ➔ High Assurance

Protect Networks/Computer

Identification & Authentication

Confidentiality (Data at Res

Confidentiality (Data in Motio

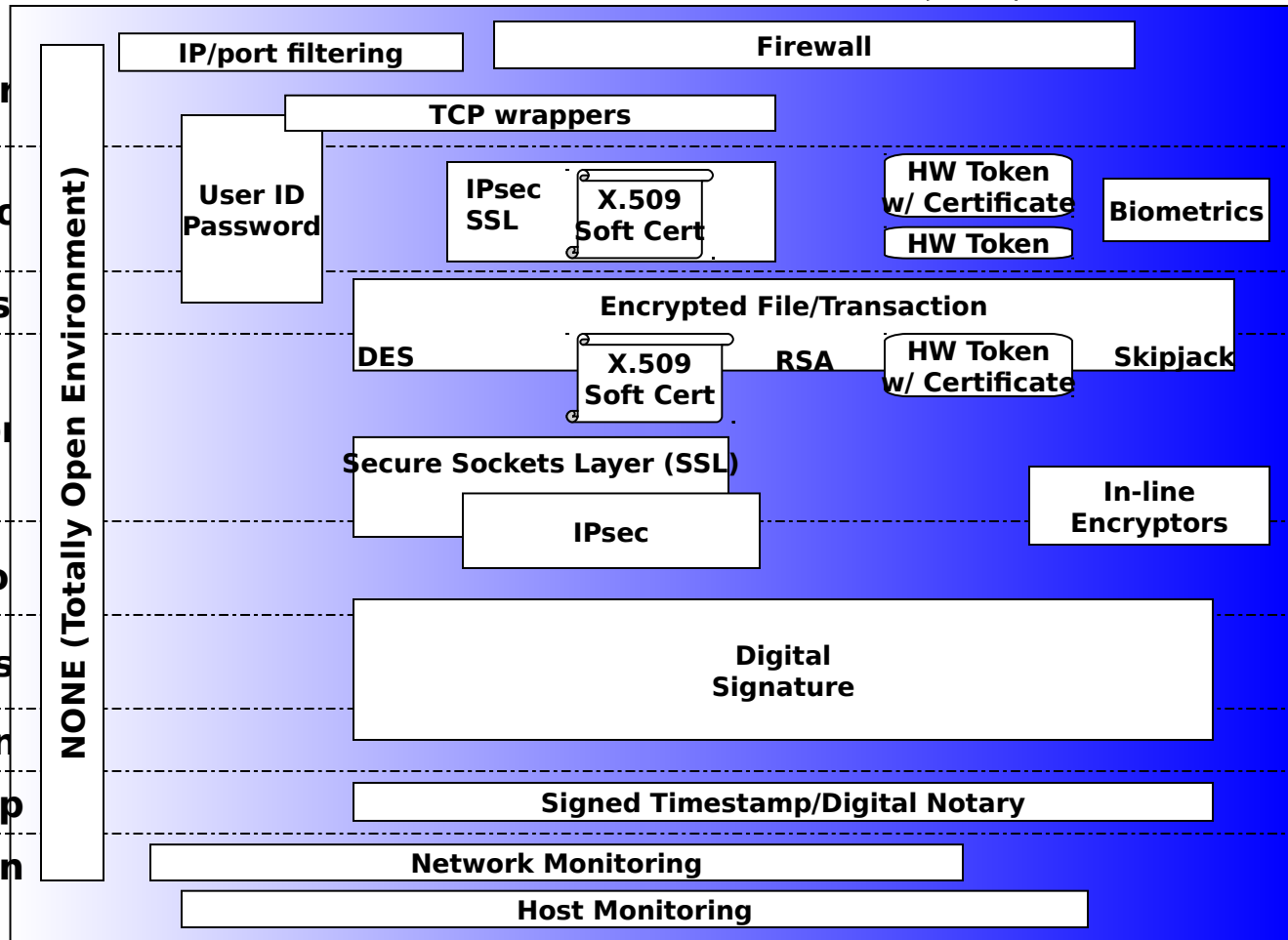
Data Integrity (Data in Motio

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Non-Repudiation

Electronic Timestamp

Intrusion Detection



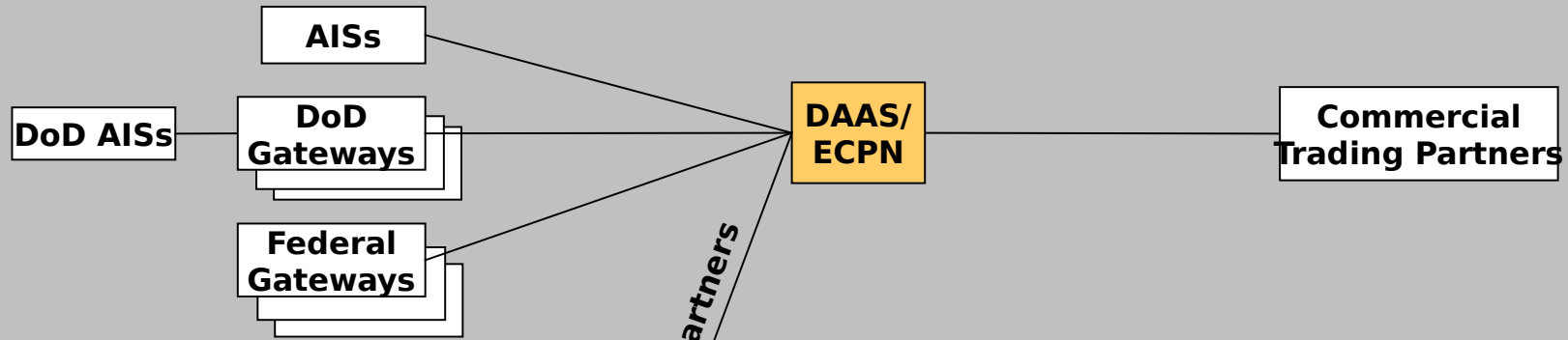


System Forecast

Connect Stakeholders/Customers (transactions)

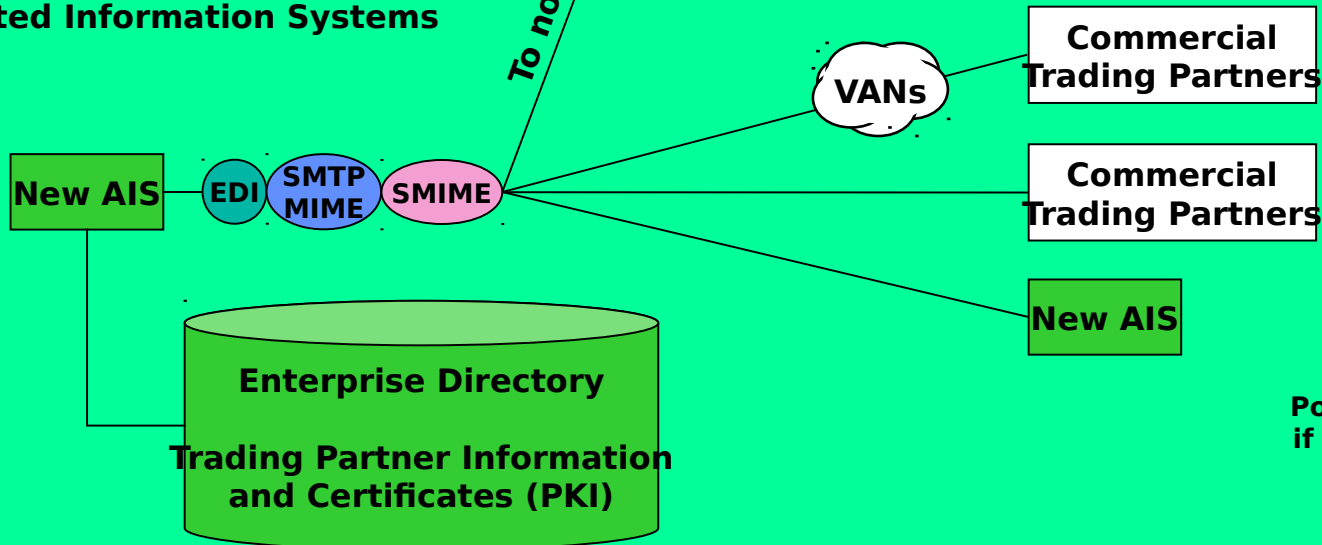
Systems View

SV-9



Legacy Environment

Direction for New Automated Information Systems



Potential security alternative if security policy demands it.

X12.58

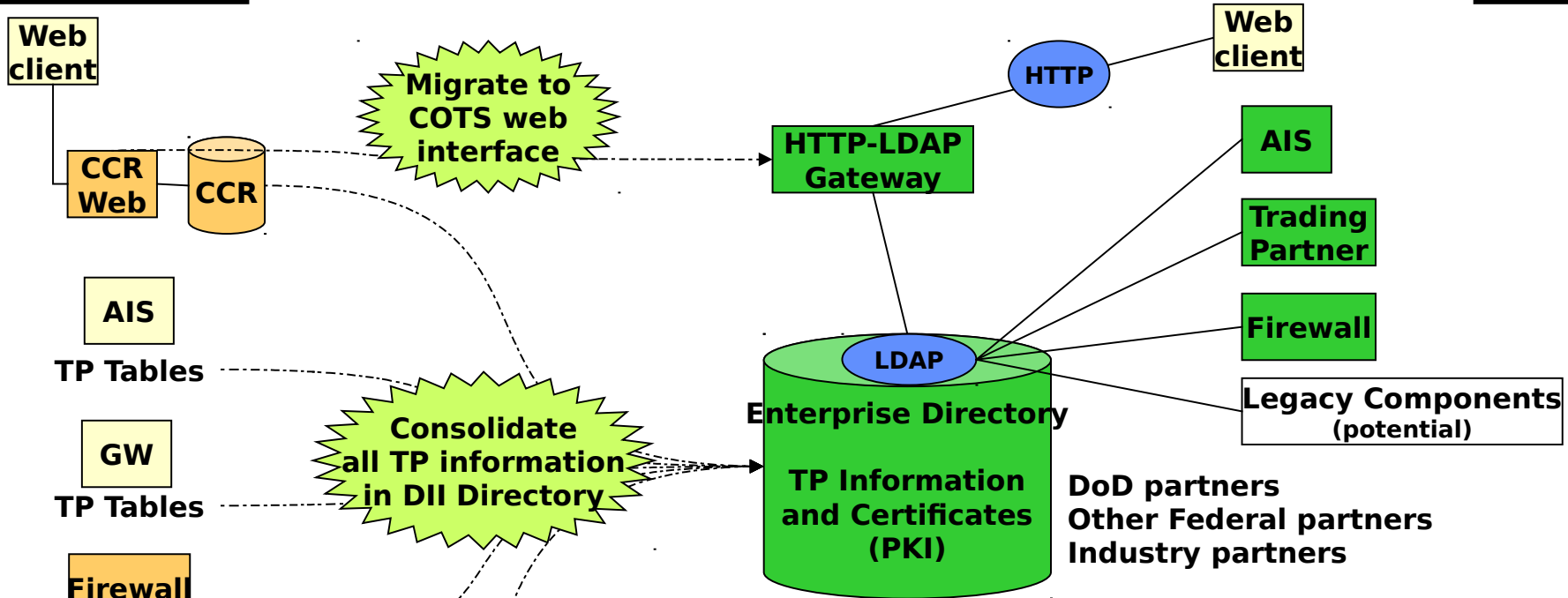


System Forecast

Trading Partner Information

Systems View

SV-9



Benefits

- Takes advantage of DII Directory Services
- Allows greater use of COTS technology (save on cost of CCR custom development)
- Common repository for all TP-related information
 - Registration information (e.g., SIC, POCs)
 - Digital certificates

Current TP information scattered among systems

DoD partners
Other Federal partners
Industry partners

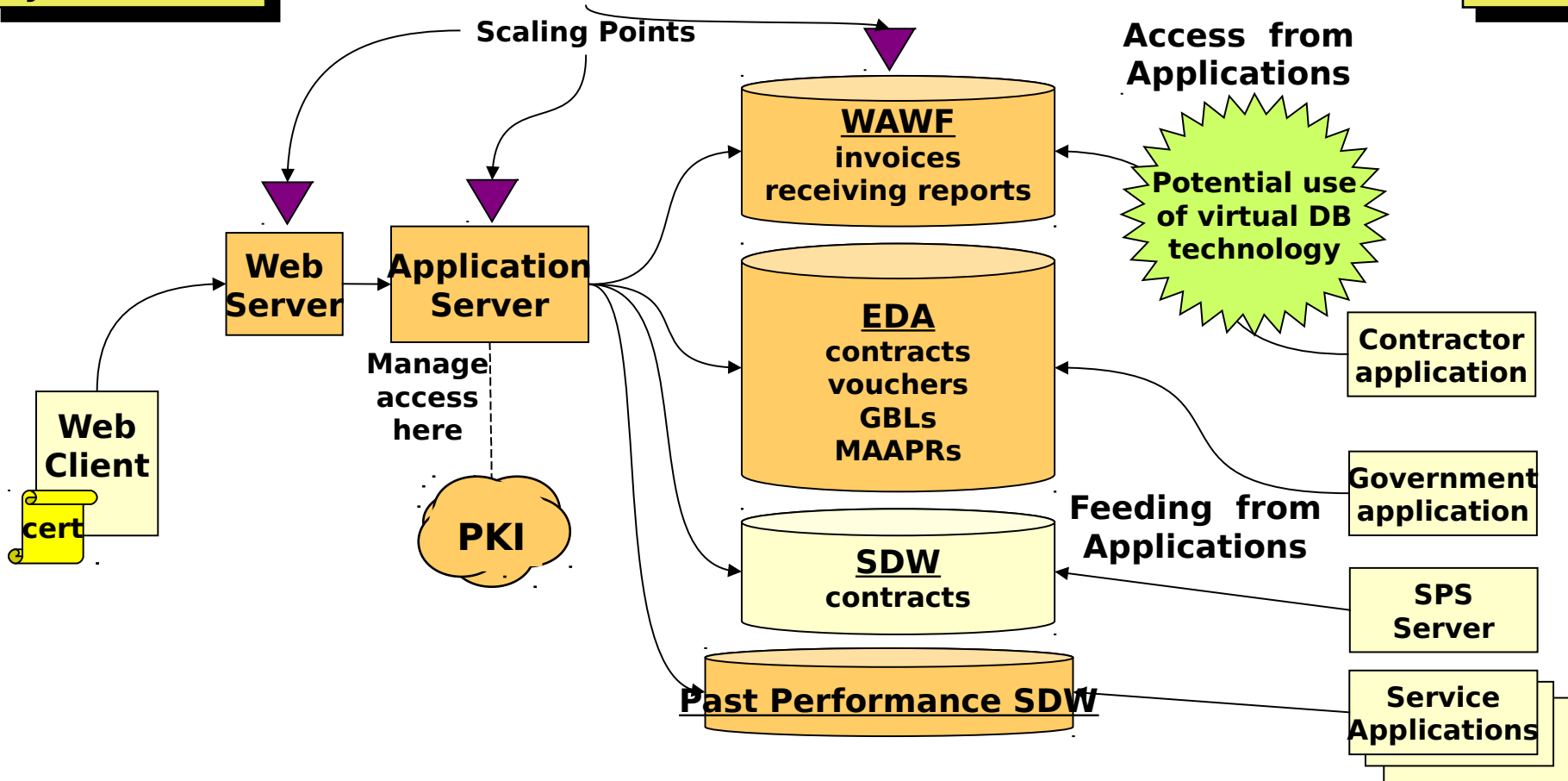


System Forecast

Manage Reference Data/Record Transactions

Systems View

SV-9



Begin phasing out use of PDF where possible. Don't create PDFs where structured data already exists.



Standards and Technology Forecast

Technical View

TV-2

Goal: Flexible architecture

Information Processing Standards

Information Transfer Standards

Information System Security Standards

Data Management

RDBMS SQL


Data Interchange

EDI FIPS 161-2

- ANSI X12
- EDIFACT
- HL7

HTML

XML



- Government ICs to Industry ICs
- EDI to Extensible Markup Language (XML)
- Smart Cards

Applications Support

E-mail SMTP/MIME

 MIME/EDI

File Transfer FTP

Directory/ X.500


Dir Access LDAP(v3)

 DNS

Web

 HTTP 1.1

 URI/mailto



- IPv6
- Web-based Push
- New EDIINT standards
- SNMPv3

Information Processing Security

Protocols X12.58

 Passwords FIPS 112


Information Transfer Security

Protocols SSL

 S/MIME

 IPsec

 EDIINT



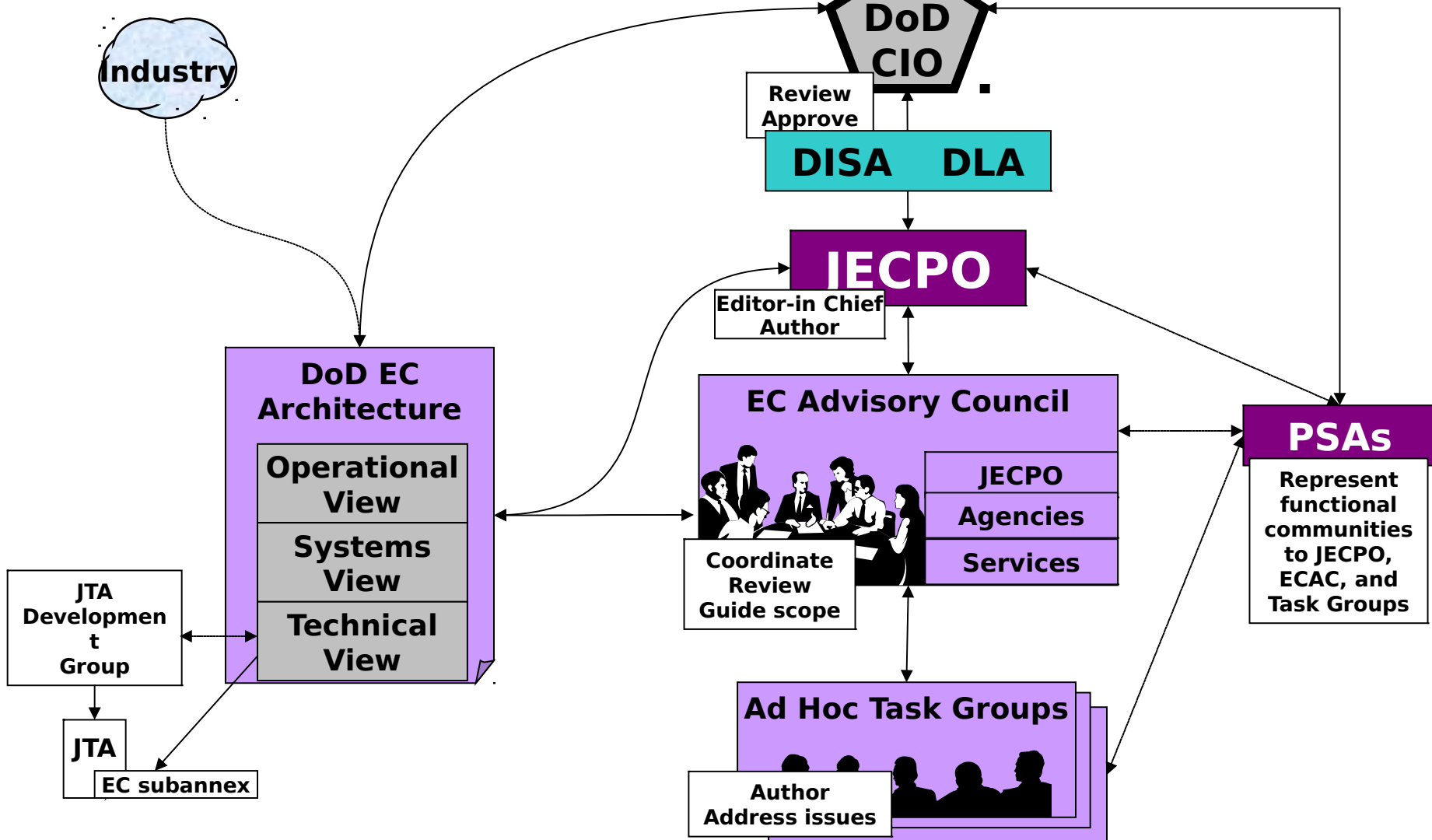
- IPsec to Transport Layer Security (TLS)
- PKI Exchange (PKIX) Working Group standards
- Smart Cards
- Secure Electronic Transactions



Coordination and Milestones



EC Architecture Management





Milestones

- **Initial EC Architecture 1.0 Strawman**
 - **Architecture purpose & scope**
 - **High-level DoD EC Operations**
 - **Business Operations Interconnections**
 - **Technical Standards Profile/Forecast**
- **Complete Briefing of EC Architecture Strawman**
- **Complete Internal coordination of Version 1.0**
- **Document all Architecture Elements (1.1) April 99**
- **Complete DoD Coordination** **TBD**



Briefings

<i>DISA Director</i>	4 Nov 98
<i>DLA Director and DISA Director</i>	10 Nov 98
<i>EC Advisory Council (ECAC)</i>	10 Dec 98
<i>Deputy Director, OASD(C3I)/I3 and OSD staff</i>	11 Dec 98
<i>Acquisition Integrated Data Environment (IDE) Executive Steering Group (ESG)</i>	7 Jan 99
<i>Industry Forum (hosted by AFED)</i>	27 Jan 99
<i>Paperless Contracting Working Integrated Product Team (PC WPT)</i>	2 Feb 99
<i>JECPO Town Hall (brief to Value Added Network providers)</i>	4 Feb 99
<i>Architecture Coordination Council (under direction of DoD CIO)</i>	TBD